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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,561	12/07/2001	Joachim Schroeder	LO25-009	8595

21567 7590 07/08/2003

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EXAMINER	
FULLER, RODNEY EVAN	
ART UNIT	**PAPER NUMBER**
2851	

DATE MAILED: 07/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/020,561	SCHROEDER ET AL.	
	Examiner	Art Unit	
	Rodney E Fuller	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Remarks

In response to applicant's Amendment, dated April 21, 2003, the examiner acknowledges the addition of claims 17-19. Claims 1-19 are pending.

Regarding the 35 U.S.C. 102(b) rejection of claims 1, 3-6, 11-16 as being anticipated by Komoriya, et al. (US 5,025,284), the applicant makes the argument "Komoriya never defines the 'initial selected refractive index'," and "therefore, **no relationship** can be stated to be taught or suggested between suitable ratio of gases (nitrogen and oxygen) and the 'initial selected refractive index.'" (Emphasis added) Further, the applicant makes the argument that "in no fair or reasonable interpretation does Komoriya teach or suggest mixing at least two inert gases in such a way that the reflective index resulting therefrom **corresponds** at least approximately to the refractive index of air as recited in claim 1." (Emphasis added) Applicant's arguments have been fully considered but they are not persuasive. As noted in Komoriya (column 6, lines 33-34) the refractive index of light (D-ray with wavelength of 589.3nm) is 1.000292 in air, 1.000297 in nitrogen, and 1.000272 in oxygen. The examiner maintains that the mixture of nitrogen and oxygen as described by Komoriya would result in a refractive index approximately to the refractive index of air. Furthermore, it can be argued that 100% nitrogen (n=1.000297) or alternatively 100% oxygen (n= 1.000272) has an index of refraction that corresponds at least approximately to the refractive index of air (n=1.000292). (Emphasis added) Further, it is clear from the respective indexes that any ratio mixture of nitrogen and oxygen would result in a refractive index that corresponds at least approximately to the refractive index of air. Thus, the

examiner has considered the applicant's arguments and maintains the rejections set forth in the Office Action mailed January 21, 2003

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-6, 11-16 and 17-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Komoriya, et al. (US 5,025,284).

Regarding claims 1, 11, 12, 15 and 16, Komoriya discloses "...flushing at least one closed internal space of an objective (Fig. 7, ref.# 9), the flushing being performed by mixing at least two inert gasses (column 5, lines 54-55, i.e., oxygen & nitrogen) in such a way that the refractive index resulting therefrom corresponds at least approximately to the refractive index of air (column 6, lines 28-36)."

Regarding claims 3 and 13-16, Komoriya discloses "...wherein the objective is provided as an exposure projection objective for semiconductor lithography." (column 1, line 19)

Regarding claim 4, Komoriya discloses "...wherein in the case of use of two inert flushing gasses the refractive index of one flushing gas is above that of air, and the

refractive index of the second flushing gas is below that of air." (See table 1 and column 5, lines 54-55, i.e., oxygen & nitrogen)

Regarding claim 5, Komoriya discloses "...wherein nitrogen is used as the first flushing gas, and an inert gas is used as second flushing gas. (column 5, lines 54-55 and column 6, lines 64-66)

Regarding claim 6, Komoriya discloses "...wherein helium is used an inert gas." (column 6, line 65)

Regarding claims 11 and 12, Komoriya also discloses "inlet bore" (Fig. 7, ref.# 30) that introduces the gas into the objective's internal space and an "outlet bore" (Fig. 7, ref.# 31) where the gas is removed from the objective's internal space.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komoriya, et al. (US 5,025,284).

Regarding claim 2, Komoriya implies that the gases are mixed in a ratio close to that of air in column 6, lines 22-36. However, Komoriya does not explicitly disclose "...wherein air or synthetic air having 78-80% nitrogen (N2) by volume and 20-22% oxygen (O2) by volume is provided." However, it would have been obvious to one

having ordinary skill in the art at the time the invention was made to select the mixture ratio of gasses as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105, USPQ 233.

Regarding claims 7 and 8, Komoriya discloses that "in addition to nitrogen and oxygen" "use can be made of carbon dioxide gas, water vapor, helium, neon, argon, and the like, to adjust the refractive index." (column 6, lines 64-66; emphasis added) However, Komoriya does not explicitly state that "krypton is used as inert gas" (claim 7) or that "xenon is used as inert gas" (claim 8). As noted in Matsumoto (US 6,411,368) (column 38, lines 29-30), the inert gases include helium, neon, argon, krypton, xenon, and radon. Thus, the selection of any of these known equivalents (i.e., inert gases) would be within the level of ordinary skill in the art.

Regarding claims 9 and 10, Komoriya does not explicitly disclose "wherein nitrogen in a volumetric fraction of 95 to 99.5% and helium in a volumetric fraction of 0.5 to 5% are used" (claim 9) or "wherein helium in a volumetric fraction of 1.1 to 1.3, preferably 1.2% is used" (claim 10). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select the mixture ratio of gasses as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105, USPQ 233.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney Fuller whose telephone number is (703) 306-5641. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams, can be reached on (703) 308-2847.

Rodney Fuller
Primary Examiner

July 2, 2003